

## CLAIMS

We claim:

- 5           1.       A Packet Data Serving Node (“PDSN”) comprising:
- a first network communication interface for connection to a first network;
- a second network communication interface for connection to a second network; and
- a protocol abstraction routine executable by a processing unit to identify if a data packet
- is associated with at least one of a first RP transfer protocol or a second RP transfer protocol, and
- 10           to at least one of decapsulate or encapsulate the data packet according to the associated RP
- transfer protocol for transmission to one of the first network or the second network.
2.       The PDSN of claim 1 wherein the first RP transfer protocol is open-RP and the
- second RP transfer protocol is closed-RP.
- 15           3.       The PDSN of claim 1 wherein the first network is a radio access network and the
- second network is a packet network.
4.       The PDSN of claim 3 wherein the packet network is the Internet.
- 20           5.       The PDSN of claim 3 wherein if the data packet is for transmission to the radio
- access network, the protocol abstraction routine encapsulates the data packet for transmission,
- and if the data packet is for transmission to the packet network, the protocol abstraction routine
- decapsulates the data packet for transmission.

6. The PDSN of claim 1 further comprising correlation-data stored in data storage,  
the correlation data defining parameters associated with an ongoing data session, wherein the  
parameters correspond to at least one of the first RP transfer protocol or the second RP transfer  
5 protocol.

7. The PDSN of claim 1 wherein the protocol abstraction routine is further arranged  
to simultaneously support a first data session using the first RP transfer protocol and a second  
data session using the second-RP protocol.

8. A PDSN comprising:

a first network communication interface for connection to a radio access network;

a second network communication interface for connection to a packet network;

a processing unit;

15 data storage;

correlation-data stored in the data storage, the correlation-data defining parameters  
associated with an ongoing data session, wherein the parameters correspond to at least one of a  
first RP transfer protocol or a second RP transfer protocol; and

a protocol abstraction routine stored in the data storage and executable by the processing  
20 unit to identify if a data packet received from a radio access network is associated with at least  
one of the first RP transfer protocol or the second RP transfer protocol, and to decapsulate the  
data packet according to the associated RP transfer protocol for transmission of the data packet  
between the radio access network and a packet network.

9. The PDSN of claim 8 wherein the protocol abstraction routine is further arranged to identify if a further data packet received from the packet network is associated with at least one of the first RP transfer protocol or the second RP transfer protocol, and to encapsulate the further data packet according to the associated RP transfer protocol for transmission of the further data packet between the packet network and the radio access network.

10. The PDSN of claim 9 wherein the first RP transfer protocol is open-RP and the second RP transfer protocol is closed-RP.

11. The PDSN of claim 9 wherein the protocol abstraction routine is further arranged to simultaneously support a first data session using the first RP transfer protocol and a second data session using the second-RP transfer protocol.

12. A PDSN comprising:

- a first network communication interface for connection to a radio access network;
- a second network communication interface for connection to a packet network;
- a processing unit;
- data storage;
- correlation-data stored in the data storage, the correlation-data defining parameters associated with an ongoing data session, wherein the parameters correspond to at least one of a first RP transfer protocol or a second RP transfer protocol; and
- a protocol abstraction routine stored in the data storage and executable by the processing unit to identify if a data packet received from a packet network is associated with at least one of

the first RP transfer protocol or the second RP transfer protocol, and to encapsulate the data packet according to the associated RP transfer protocol for transmission of the data packet between the packet network and a radio access network;

5           13.    The PDSN of claim 12 wherein the first RP transfer protocol is open-RP and the second RP transfer protocol is closed-RP.

10           14.    The PDSN of claim 12 wherein the protocol abstraction routine is further arranged to simultaneously support a first data session using the first RP transfer protocol and a second data session using the second-RP transfer protocol.

15           15.    A method for supporting simultaneous data sessions on dissimilar access networks, the method comprising:

receiving a data packet from a first network;

15           identifying if the data packet corresponds to at least one of a first RP transfer protocol or a second RP transfer protocol;

at least one of encapsulating or decapsulating the data packet according to the first RP transfer protocol when the data packet is associated with the first RP transfer protocol;

20           at least one of encapsulating or decapsulating the data packet according to the second RP transfer protocol when the data packet is associated with the second RP transfer protocol; and

transmitting the data packet to a second network.

16. The method of claim 15 wherein the first RP transfer protocol is open-RP and the second RP transfer protocol is closed-RP.

17. The method of claim 15 wherein when the first network is a radio access network and the second network is a packet network the data packet is decapsulated.

18. The method of claim 15 wherein when the first network is a packet network and the second network is a radio access network the data packet is encapsulated.

19. A method for supporting simultaneous data sessions on dissimilar access networks, the method comprising:

receiving a data packet from at least one of a radio access network or a packet network;

identifying if the data packet corresponds to at least one of a first RP transfer protocol or a second RP transfer protocol using a protocol abstraction routine;

decapsulating the data packet, using the protocol abstraction routine, according to the first RP transfer protocol when the data packet is received from a radio access network and is associated with the first RP transfer protocol, for transmission to a packet network;

decapsulating the data packet, using the protocol abstraction routine, according to the second RP transfer protocol when the data packet is received from the radio access network and is associated with the second RP transfer protocol, for transmission to the packet network;

encapsulating the data packet, using the protocol abstraction routine, according to the first RP transfer protocol when the data packet is received from the packet network and is associated with the first RP transfer protocol, for transmission to the radio access network;

encapsulating the data packet, using the protocol abstraction routine, according to the second RP transfer protocol when the data packet is received from the packet network and is associated with the second RP transfer protocol, for transmission to the radio access network; and

5           transmitting at least one of a decapsulated data packet to the packet network or an encapsulated data packet to the radio access network.

20.       The method of claim 19 wherein the first RP transfer protocol is open-RP and the second RP transfer protocol is closed-RP.